

WHAT IS CLAIMED IS:

1. A composition for thickening hydrophobic liquids comprising a layered silicate material, surfaces of said layered silicate material modified by an amphipathic copolymer prepared from a first comonomer that generates a hydrophilic homopolymer that is essentially insoluble in a hydrophobic liquid and a second comonomer that generates a hydrophobic homopolymer that is soluble in a hydrophobic liquid.

2. The composition of claim 1 further comprising a thickening aid.

3. The composition of claim 2 wherein the thickening aid is selected from the group consisting of propylene carbonate, hexylene glycol, ethanol, propylene glycol, butylene glycol, water, and mixtures thereof.

4. The composition of claim 1 wherein the hydrophobic liquid comprises one or more nonpolar liquid having a dielectric constant of less than about 10.

5. The composition of claim 1 wherein the hydrophobic liquid is selected from the group consisting of a silicone oil, a mineral oil, a liquid hydrocarbon, a petroleum-derived oil, an ester solvent, a vegetable oil, a flower oil, and mixtures thereof.

6. The composition of claim 1 wherein the layered silicate material comprises a smectite clay, a sodium lithium magnesium silicate, or a mixture thereof.

7. The composition of claim 6 wherein the smectite clay is selected from the group consisting of bentonite, montmorillonite, saponite, hectorite, bidelite, stevensite, and mixtures thereof.

8. The composition of claim 1 wherein the copolymer is a graft copolymer or a block copolymer.

9. The composition of claim 1 wherein the copolymer is soluble or dispersible in hydrophobic liquids having a dielectric constant of less than about 10.

10. The composition of claim 9 wherein the copolymer comprises a triblock copolymer.

11. The composition of claim 10 wherein the triblock copolymer comprises poly(ethylene glycol-30)-co-dipoly(hydroxystearate), BIS-PEG 15 dimethicone/IPDI copolymer, or a mixture thereof.

12. The composition of claim 1 wherein the first comonomer, when polymerized, provides a homopolymer selected from the group consisting of poly(oxyethylene), poly(ethylene glycol), poly(propylene glycol), poly(vinyl chloride), poly(acrylate), and poly(acrylamide).

13. The composition of claim 1 wherein the second comonomer, when polymerized, provides a homopolymer selected from the group consisting of poly(hydroxystearate), poly(12-hydroxystearic acid), poly(lauryl methacrylate), polystyrene, poly(dimethylsiloxane), poly(vinyl acetate), poly(methyl methacrylate), and poly(vinyl methyl ether).

14. The composition of claim 1 comprising about 30% to about 90% of the hydrophobic liquid, about 0.5% to about 70% of the layered silicate, and about 0.025% to about 50% of the copolymer, by weight, of the composition.

15. The composition of claim 14 further comprising a thickening aid in an amount of about 0.025% to about 20%, by weight, of the composition.

16. The composition of claim 1 further comprising about 0.1% to about 50%, by weight, of the composition of at least one functional particulate material.

17. The composition of claim 16 wherein the functional particulate material is selected from the group consisting of titanium dioxide, mica, calcium carbonate, kaolinite clay, alumina, talc, zinc oxide, calcium sulfate, iron oxide, an organic pigment, and mixtures thereof.

18. A method of producing the composition of claim 1 comprising dissolving the copolymer in the hydrophobic liquid, adding the layered silicate material, then homogenizing the resulting slurry in a high shear mixer or an extruder.

19. A composition for thickening a hydrophobic liquid, said composition comprising at least one layered silicate material dispersed in a mixture of hexylene glycol and water, and an amphipathic copolymeric surface-modifier for the layered silicate, emulsified in the hexylene glycol and water mixture.

20. The composition of claim 19 wherein the hydrophobic liquid is essentially insoluble in water.

21. The composition of claim 20 wherein the hydrophobic liquid has a dielectric constant of less than about 10.

22. The composition of claim 20 wherein the hydrophobic liquid is selected from the group consisting of a silicone oil, a mineral oil, a liquid hydrocarbon, a petroleum-derived oil, an ester solvent, a vegetable oil, a flower oil, and mixtures thereof.

23. The composition of claim 22 wherein the layered silicate comprises a smectite clay, a lithium magnesium silicate, or a mixture thereof.

24. The composition of claim 23 wherein the smectite clay is selected from the group consisting of bentonite, montmorillonite, saponite, hectorite, bidelite, stevensite, and mixtures thereof.

25. The composition of claim 20 wherein the copolymeric surface-modifier is prepared from a first comonomer that generates a homopolymer that is essentially insoluble in a hydrophobic liquid, and a second comonomer that generates a homopolymer that is soluble in a hydrophobic liquid, wherein the copolymer is insoluble in water.

26. The composition of claim 25 wherein the first comonomer, when polymerized, provides a homopolymer selected from the group consisting of poly(oxyethylene), poly(ethylene), poly(propylene), poly(vinyl chloride), poly(methyl methacrylate), and poly(acrylamide);

and the second comonomer, when polymerized, provides a homopolymer selected from the group consisting of poly(hydroxystearate), poly(12-hydroxystearic acid), poly(lauryl methacrylate), polystyrene, poly(dimethylsiloxane), poly(vinyl acetate), poly(methyl methacrylate), and poly(vinyl methyl ether).

27. The composition of claim 19 comprising about 0.5% to about 70% of the layered silicate, about 0.025% to about 35% of the copolymeric surface modifier, and about 0.5% to about 20%, of a thickening aid, by weight, of the composition.

28. The composition of claim 19 further comprising about 0.1 to about 30%, by weight, of the composition, of at least one functional particulate material selected from the group consisting of titanium dioxide, calcium carbonate, kaolinite clay, alumina, talc, zinc oxide, calcium sulfate, an organic pigment, and iron oxide.

29. A method of thickening a hydrophobic composition comprising adding a sufficient amount of the composition of claim 1 to the hydrophobic composition to provide a predetermined viscosity.

30. The method of claim 29 wherein the hydrophobic composition is selected from the group consisting of a cosmetic product, a personal care product, and a pharmaceutical product.

31. The method of claim 29 wherein the hydrophobic composition is selected from the group consisting of a liquid makeup, an eye shadow, a mascara, a lip color, a nail product, an antiperspirant, a deodorant, a pharmaceutical product, a sunscreen, a paint, and a coating product.

32. A method of dispersing a particulate material in a hydrophobic solvent comprising adding the particulate material to the hydrophobic solvent, and adding a sufficient amount of the composition of claim 1 to the hydrophobic solvent to disperse and suspend the particulate material in the hydrophobic solvent.

33. The method of claim 32 wherein the particulate material is selected from the group consisting of titanium dioxide, calcium carbonate, kaolinite clay, alumina, talc, zinc oxide, calcium sulfate, an organic pigment, iron oxide, and mixtures thereof.